

Applied Sustainability

Using a Life Support Systems Approach
At NASA Ames Research Center

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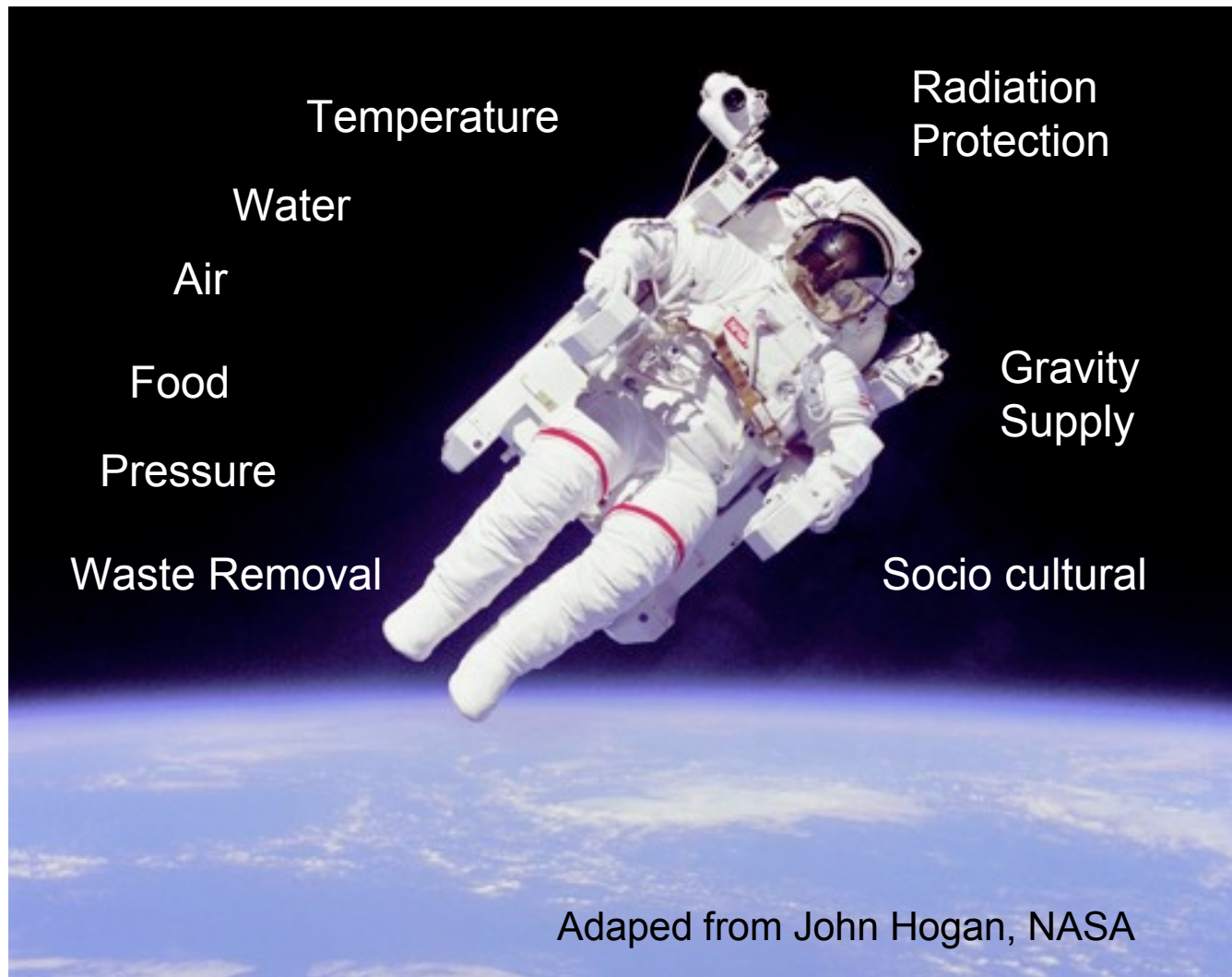
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Objectives - Federal

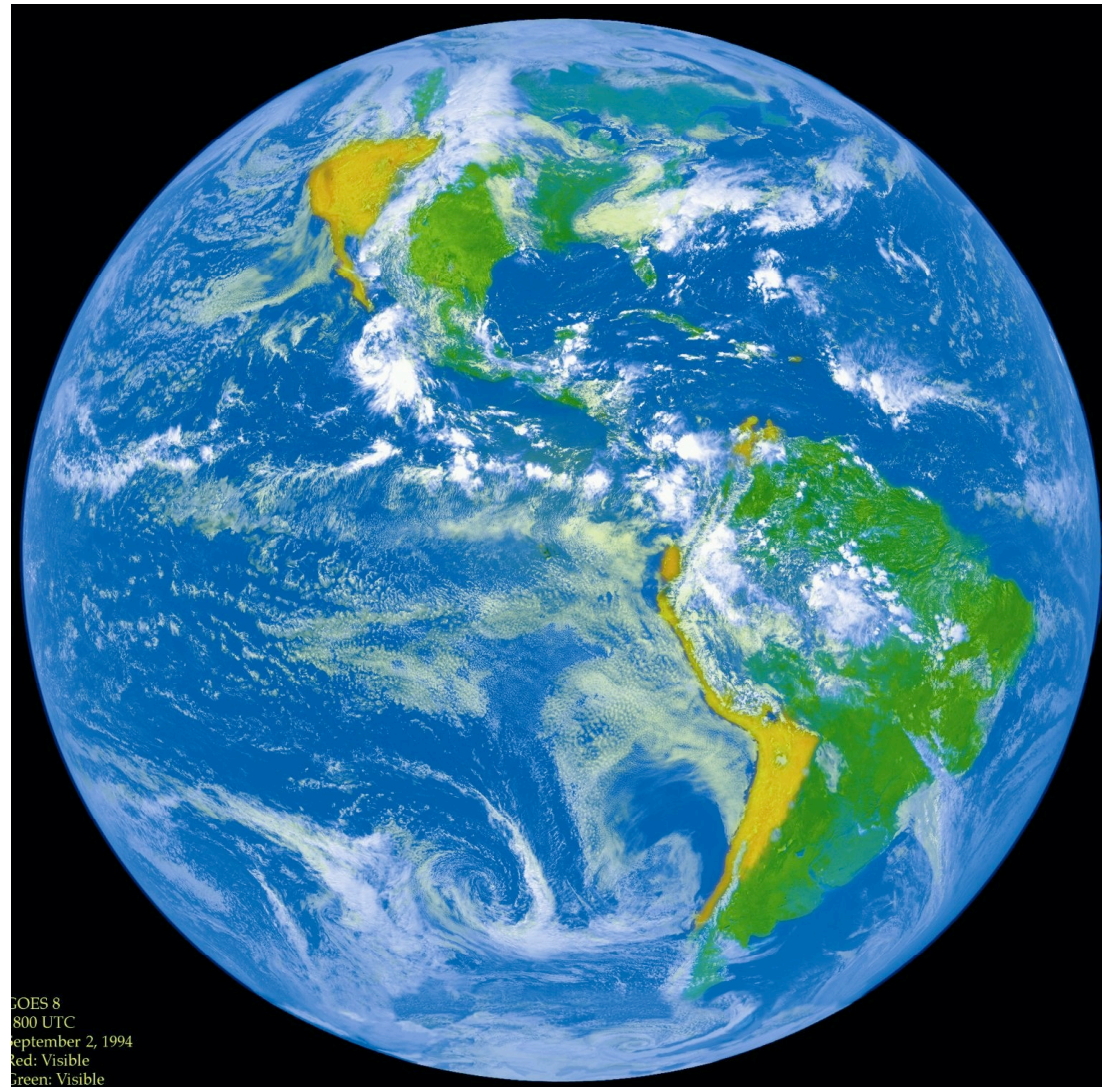
- Review Federal **stewardship** responsibility
 - National Environmental Policy Act (NEPA) of 1969
 - *“Productive harmony”*
 - Every agency, every person
 - A “systems” approach
- Review Federal definition of environmental **“sustainability”**
 - E.O. 13423, Strengthening Federal Environmental, Energy, and Transportation Management, 2007
 - *“to create and maintain conditions, under which humans and nature can exist in **productive harmony**, that permit fulfilling the social, economic, and other requirements of present and future generations of Americans”*

Life Support Systems

Astronauts



The Blue Marble



NASA Ames & Its Life Support Systems



NASA's 4 Strategic Focus Areas at Ames

- **Management and Support**
 - Budget, staffing, training, etc.
 - Events, e.g., Earth Day, Yuri's Night, Safety Week
 - Awards, e.g., NASA Blue Marble, Ames Sustainability Award
- **Direct Mission Support**
 - Environmental impact analysis and mitigation
 - Permits and other approvals, plans, negative findings
- **Protection of Mission Resources**
 - EO 13423, Environmental Management System, and audits
 - Green remediation (clean-up) and restoration
- **Proactive Risk Mitigation**
 - Special topics, e.g., bioremediation and sea level rise

Environmental Management System (EMS)

- Policy & Procedures

- 14 CFR subpart 1216.1, NASA Environmental Quality
- NPD 8500.1 & APD 8800.4, Environmental Policy
- NPR (multiple) & APR 8800.3, Environmental Procedural Requirements

- Communication

- Awareness/Training/Advising
- Community involvement
- Customer feedback



- Reporting

- Internal metrics (85)
- Regulatory agencies

- Support

- Reviews, studies, plans
- Permit administration
 - Applications, fees, approvals, waivers
 - Hazwaste pickup and disposal
- Hazmat emergency response

- Monitoring & Evaluation

- Sampling, audits, inspections, inventories
- Corrective actions

National Environmental Policy Act



- NASA Ames Development Plan (NADP) “Programmatic” Environmental Impact Statement (EIS)
- Mitigation Implementation & Management Plan (MIMP)
- Record of Decision (ROD) 2002
- Public documents
 - <http://researchpark.arc.nasa.gov>
- GSA Sustainable Design Award

Encroachment

Anticipating Effects of Climate Change on NASA Ames

- Heat, Demand on energy supply
- Drinking water supply
- Industrial waste water flow and pumps
- Storm water flow and pumps
 - Flooding basements, ditches, Airfield
- Remediation treatment systems
- Wildlife and habitat changes
- Land area loss
- Saltwater intrusion
- Rising water table, spread of contamination

Environmental Services
Division and others:

Working with the Army
Corps of Engineers on the
Corps shoreline study to
improve levees.

Facilities Engineering

Placing electrical
equipment above ground.

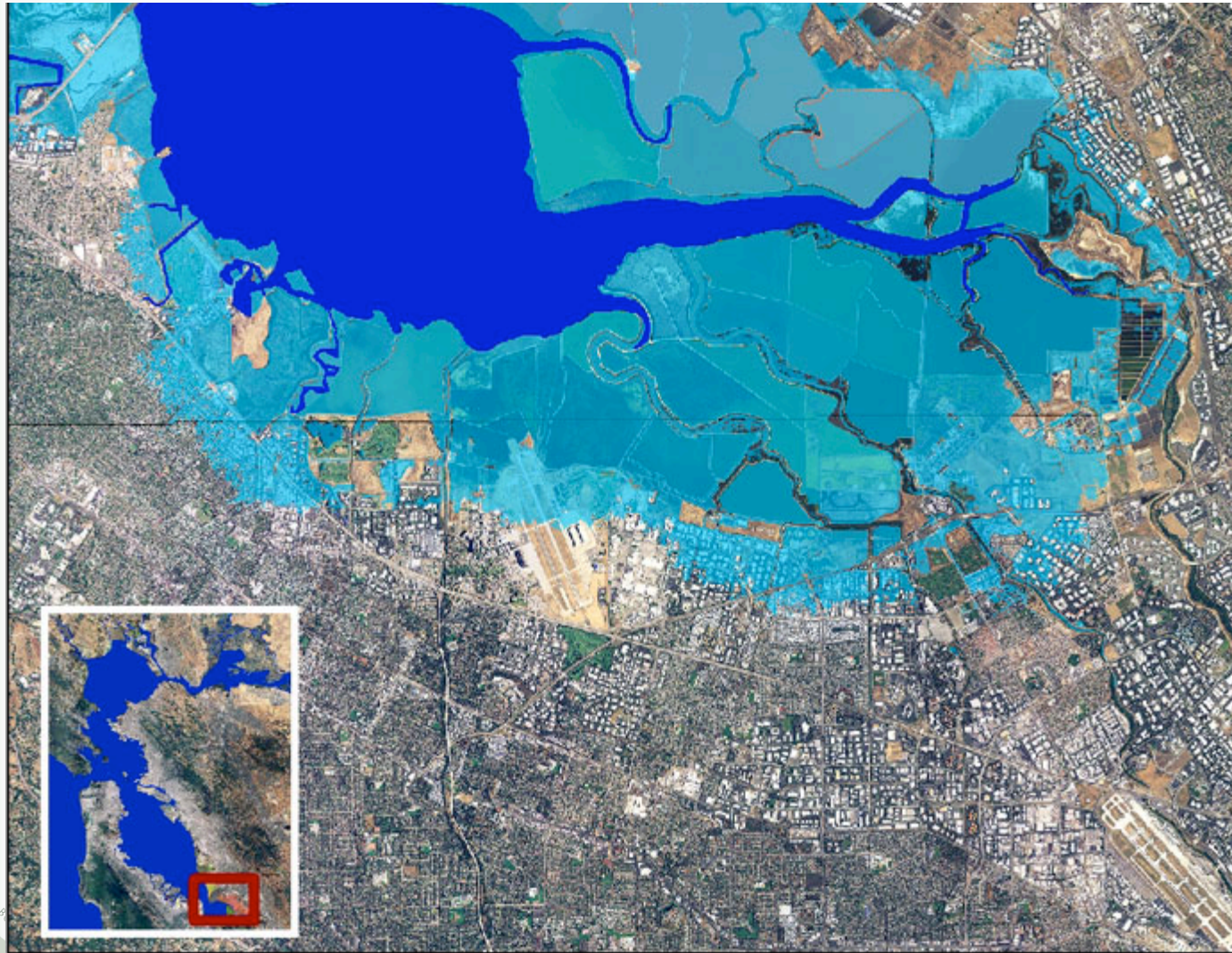


Figure 1. Sea level rise example: Projected 1 meter rise in Mean Sea Level in the South San Francisco Bay. Does not include mean high tide level.
(Source: San Francisco Bay Conservation and Development Commission)

Ames Research Center Environmental Services Division

